

Claims

1. A process for increasing the yield of plants comprising transforming a plant with at least one recombinant DNA construct comprising
 - (a) a region allowing the transcription specifically in the companion cells; and operatively linked thereto
 - (b) a nucleotide sequence encoding a polypeptide selected from the group consisting of:
 - (i) proteins with an enzymatic activity that cleaves sucrose;
 - (ii) sucrose transporters;
 - (iii) proteins the activity of which leads to the stimulation of the proton gradients located at the plasma membrane of plant cells; and
 - (iv) citrate synthases;wherein said at least one construct is stably integrated into the genome of said plant and wherein the expression of said nucleotide results in an increase in plant yield.
2. The process of claim 1, wherein the nucleotide sequence encodes a plant protein.
3. The process of claim 1, wherein the nucleotide sequence encodes a protein from a bacterium or a fungus.
4. The process of claim 1, wherein the nucleotide sequence encodes a protein with an enzymatic activity that cleaves sucrose, selected from the group consisting of sucrose synthases, sucrose phosphorylases and invertases.
5. The process according to claim 1, wherein the region mentioned in (a) is the *rolC* promoter from *Agrobacterium rhizogenes*.
6. A recombinant nucleic acid molecule comprising
 - (a) a region allowing the transcription specifically in the companion cells of plants; and operatively linked thereto

(b) a nucleotide sequence encoding a polypeptide selected from the group consisting of

- (i) sucrose synthases;
- (ii) sucrose phosphorylases;
- (iii) sucrose transporters;
- (iv) proteins the activity of which leads to the stimulation of the proton gradient located at the plasma membrane of plant cells; and
- (v) citrate synthases,

wherein said recombinant nucleic acid molecule, when stably integrated into the genome of plants and expressed, leads to an increase of the yield of plants.

7. A vector comprising the recombinant nucleic acid molecule of claim 6.
8. The vector of claim 7, wherein the vector is suitable for transformation of plant cells and for integration of foreign DNA into the plant genome.
9. A plant cell transformed with and comprising a recombinant nucleic acid molecule of claim 6.
10. A plant comprising plant cells of claim 9, wherein the plant shows an increased yield in comparison to a corresponding non-transformed plant due to the expression of the recombinant nucleic acid molecule in the companion cells of the plant.
11. Propagation material of a plant of claim 10.
12. Use of a recombinant nucleic acid molecule containing a region allowing the transcription specifically in the companion cells of plants and operatively linked thereto a nucleotide sequence encoding a polypeptide selected from the group consisting of
 - (i) proteins with an enzymatic activity that cleaves sucrose;
 - (ii) sucrose transporters;
 - (iii) proteins the activity of which leads to the stimulation of the proton gradient located at the plasma membrane; and

(iv) citrate synthases,
for the expression in transgenic plants for increasing the yield.